CASE REPORTS

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Appendiceal Stones Simulating Ureteral Calculi

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REPORTS AS TO THE INCIDENCE of calcified stones in the appendix vary widely. Bunch and Adcock[1] observed only one case in 2,000 patients with appendicitis. Steinert[5] noted appendiceal calculi in ten of 104 patients who had appendectomy; and in seven of the ten cases the diagnosis was made before operation. More recently Felson and Bernhardt[2] reported ten cases among 300 in which appendectomy was done. The importance of early correct diagnosis of the condition was emphasized many years ago by Murphy,[3] who noted that perforation occurred quite early in the course of obstructive appendicitis and reported the occurrence of perforation in half of the cases in one series of patients with obstruction.

Although appendiceal stones may have certain radiographic features that help to distinguish them, differentiation from ureteral calculi is not always easy. The similarity of symptoms and radiographic appearance has been commented on since 1908.[4] Felson and Bernhardt outlined several helpful radiographic features of appendiceal stones: (1) They are usually single, and almost always laminated. (2) They are usually over 1 cm. in diameter. (3) In stereoscopic views or in films taken in various oblique positions, they always appear close to the cecum; and they may be in a position that is obviously outside the course of the ureter.

These features, in addition to the history, will usually distinguish appendiceal from ureteral stone. In the case herein reported, however, the symptoms were those of ureteral colic and the appendiceal stones observed at operation did not have the usual characteristics. Radiographically they were not laminated, they were less than 1 cm. in size, and they were directly in the course of the distal right ureter. An excretory urogram was required to make certain they were not in the urinary tract.

CASE REPORT

A white woman 39 years of age was admitted to hospital in severe pain that had begun about seven hours previously as severe cramping pain in the right upper quadrant of the abdomen. The pain radiated into the epigastrium and was shortly followed by nausea and vomiting. After about an hour and a half the pain eased and the patient drove a car to take her husband to work. Approximately 20 minutes later she had a normal bowel movement. Two hours later she was found lying on the floor doubled with pain which continued until admittance to hospital. The pain was described as colicky in nature, coming in waves, and rapidly building to a peak intensity. It slowly became less severe but never abated completely. The pain was localized to the right of the umbilicus, did not cross the midline or radiate into the flank or groin. The patient vomited many times before admittance and this did not affect the pain. There was no history of hematuria, dysuria, pyuria or urgency, of chills or fever, or of passing pus, blood or mucus by rectum. The last menstrual period had occurred two weeks previously and had lasted the usual four days with the normal amount of flow.

When examined the patient was pale, sweating and doubled with extreme pain in the right side of the abdomen. The pulse rate was 108 per minute and the blood pressure was 120 mm. of mercury systolic and 86 mm. diastolic. There was generalized muscular rigidity over the abdomen, with tenderness most pronounced at McBurney's point. Extreme rebound tenderness was referred to the right lower quadrant from all quadrants of the abdomen. No masses or organs were palpable. Peristalsis was absent. Upon pelvic examination the uterus was observed to be small and anteflexed. Except for bilateral tenderness no abnormality was noted in the adnexae. The cervix was somewhat cystic. Bilateral tenderness was noted on rectal palpation.

A specimen of urine taken by catheter was clear and alkaline with a specific gravity of 1.023. It contained no albumin and no sugar. Four to six pus cells per high power field and occasional squamous epithelium cells were noted in microscopic examination of the urine. Erythrocyte content of the blood was 4.2 million per cu. mm. and the hemoglobin value was 86 per cent. Leukocytes numbered 22,300 per cu. mm.—78 per cent polymorphonuclear cells, 19 per cent lymphocytes and 3 per cent monocytes.

In a roentgenogram of the abdomen minimal ileus of the small bowel and the presence of gas in the colon were noted. Within the pelvic brim there were two non-laminated calcifications on the right side, one of them 4 mm. and the other 6 mm. in diameter. By intravenous pyelography it was observed that the calcifications were outside the course of the right ureter (Figure 1). A diagnosis of appendicitis with perforation and spreading peritonitis was made.

A right perirectus incision was made in the abdomen and when the peritoneum was opened free pus was observed between all loops of the small intestine. The appendix, which lay mesial to the cecum, was gangrenous and ruptured at the lower one-third. The larger calcification protruded through the opening in the appendiceal wall and when the appendix was lifted from its bed the calculus fell into the surgeon's hand. The smaller stone was palpable in

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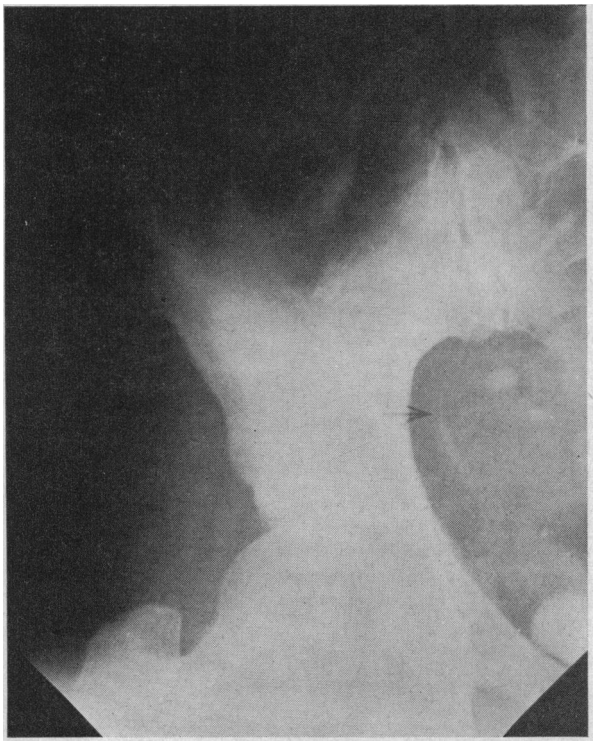

Figure 1.—Portion of the intravenous pyelogram showing relation of calculi to dye-filled ureter (arrow) within the pelvis.

the lumen of the appendix. The appendix was removed in the routine manner. One million units of aqueous penicillin G and 1 gm. of streptomycin were instilled into the peritoneal cavity. The incision was closed without drainage. Continuous gastric suction was applied and the patient was given fluid and antibiotics intravenously. Recovery was uneventful.

The appearance of the calculi in a roentgen film made of them after removal was identical with that seen in the preoperative roentgenograms. Sectioned, the stones were observed to be of laminated crystalline-like structure, yellow in color, and fairly homogeneous throughout.

SUMMARY

A case is reported in which appendiceal calculi simulated the roentgen appearance and the symptoms of ureteral stones. By intravenous pyelography it was determined that the stones lay outside the course of the ureter. Appendectomy was carried out and the stones were found in the appendix.

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Fat Emulsion as Dietary Supplement

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ALTHOUGH FAT is a satisfactory source of energy to supplement inadequate nutrition without supplying too much bulk, since it contains 9 calories per gram as opposed to 4 calories per gram of protein or carbohydrate, many fat diets are unpalatable and produce a feeling of fullness.

Van Itallie and co-workers[2] reported that fat emulsion as a food was well tolerated and assimilated by normal persons and that nitrogen and potassium deficits were overcome as a result of increased fat intake.

Forbes and Swift[1] observed that the specific dynamic action of any diet is affected by the proportions of protein, fat and carbohydrate it contains and that the high specific dynamic action of protein is retarded more by fat than by any other concomitant nutrient. Thus the caloric efficiency of a diet is considerably improved by the addition of fat, which reduces the loss of energy in utilization.

Four cases are here reported in which diet was supplemented with fat emulsion. The preparation used* is palatable and acceptable because of the small size of its particles. It is readily absorbed and utilized by both adults and children. Containing 40 per cent fat and 10 per cent glucose, it has 4 calories per milliliter, or 120 calories per ounce.

In each case urine specimens were taken every 24 hours and were pooled for analysis at 72-hour intervals. Nitrogen intake was estimated from the protein content of the diet. Urinary nitrogen content was determined by the Kjeldahl method.

CASE 1: A 22-year-old unmarried white woman was admitted to hospital with the chief complaint of loss of 40 pounds in weight and amenorrhea for the past five years. Menstruation had begun at the age of 15 years and had been regular. At the age of 16 the patient began to overeat and attained a weight of 135 pounds. A year later the weight declined to 120 pounds (it was estimated that the weight should have been 125 pounds) and amenorrhea developed. After treatment with vitamin injections and desiccated thyroid there was some gain, but after the patient completed high school the weight again began to decline, this time to 110 pounds, and the decline continued despite medical treatment. The patient began to work as a file clerk. During the five months before admittance to hospital the weight declined from 106 pounds to 85 pounds. At a clinic a diagnosis of anorexia nervosa was made and the patient was referred for psychiatric treatment, which after two visits she refused to continue. Another physician then admitted her to hospital for treatment of malnutrition.

On physical examination, although the flesh was observed to be wasted, there was no muscle weakness. The breasts were well developed and pubic and axillary hair were normal. The blood pressure was 106 mm. of mercury on systole and 74 mm. on diastole.

Erythrocytes numbered 4,650,000 per cu. mm. The hemoglobin value was 82 per cent. Leukocytes numbered 10,700 per cu. mm.—64 per cent polymorphonuclear cells and 42 per cent lymphocytes. Blood cholesterol content was 261 mg. per 100 cc. The number of eosinophils was not reduced after administration of corticotropin (Thorne method). The non-protein nitrogen content was 29 mg. per 100 cc. The glucose tolerance curve was low and flat.

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*Lipomul—oral was supplied gratis by the makers, Upjohn Company, Kalamazoo, Mich.